LOOPING STATEMENTS

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1. **Write C program to print 1 to 10 number.**

❖ **Code:**
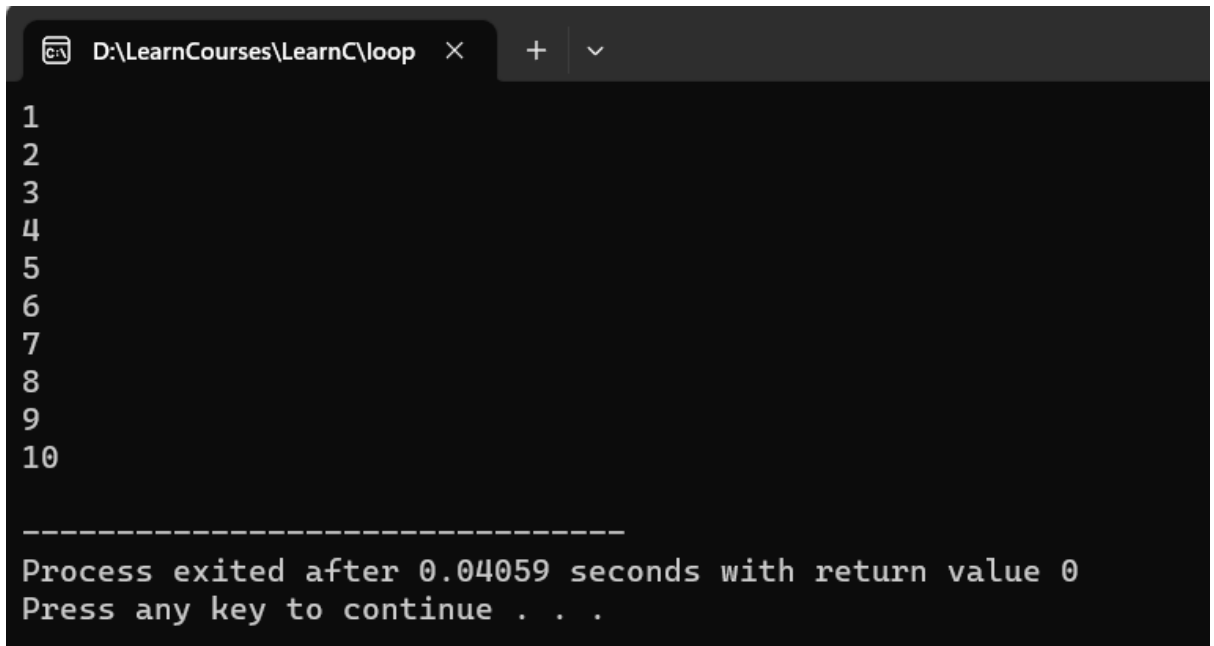
```c
#include<stdio.h>

int main() {

        int i;

        for (i=1; i<= 10; i++) {
                printf("%d\n", i);
        }

        return 0;
}
```

❖ **Output:**

```
D:\LearnCourses\LearnC\loop    ×    +    ∨

1
2
3
4
5
6
7
8
9
10

--------------------------------
Process exited after 0.04059 seconds with return value 0
Press any key to continue . . .
```

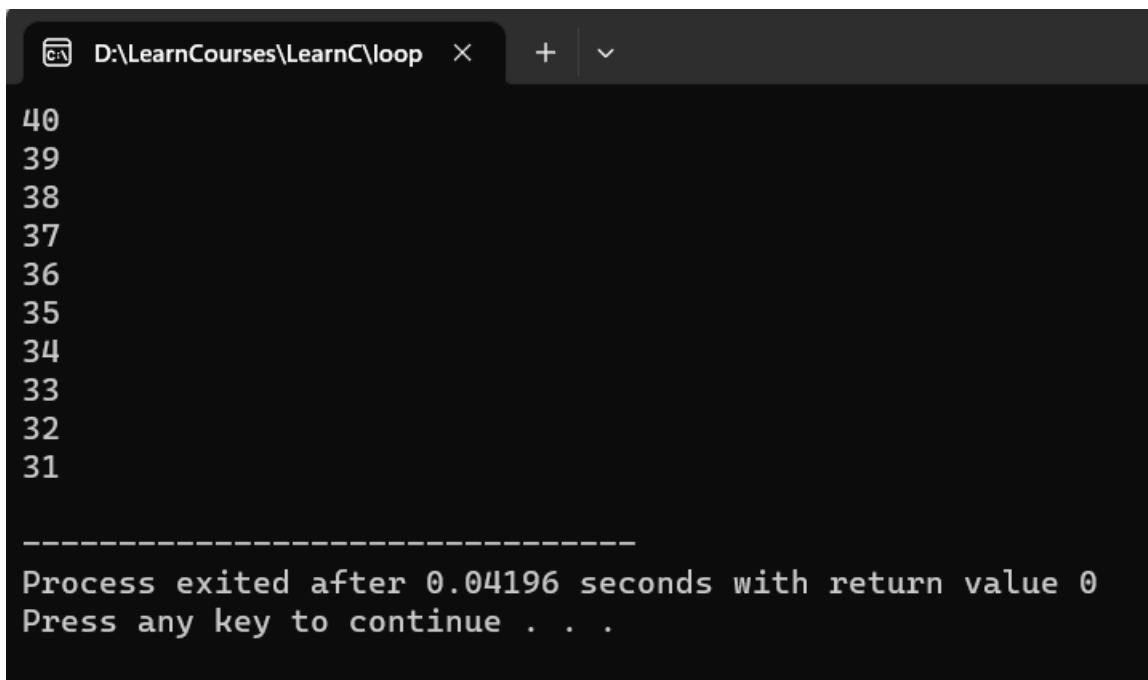2. **Write C program to print 40 to 31 number.**

❖ **Code:**

```c
#include<stdio.h>

int main() {

        int i;

        for (i=40; i>= 31; i--) {
                printf("%d\n", i);
        }

        return 0;
}
```

❖ **Output:**

3. **Write C program to print odd number from 80 to 100.**

❖ **Code:**

```c
#include<stdio.h>

int main() {

        int i;

        for (i=80; i<= 100; i++) {
                if (i % 2 == 1) {
                        printf("%d\n", i);
                }
        }

        return 0;
}
```
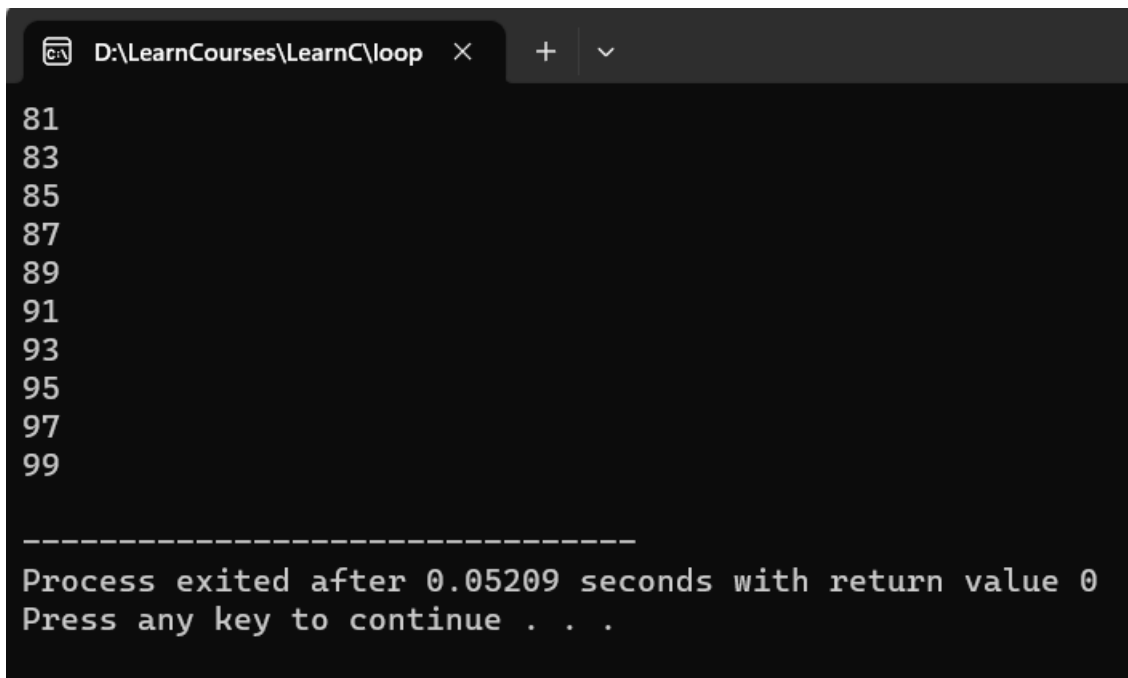
❖ **Output:**

```
D:\LearnCourses\LearnC\loop    ×    +    ∨

81
83
85
87
89
91
93
95
97
99


_____
Process exited after 0.05209 seconds with return value 0
Press any key to continue . . .
```

4. **Write C program to print number that are divisible by 5 from 25 to 50 number.**

❖ **Code:**
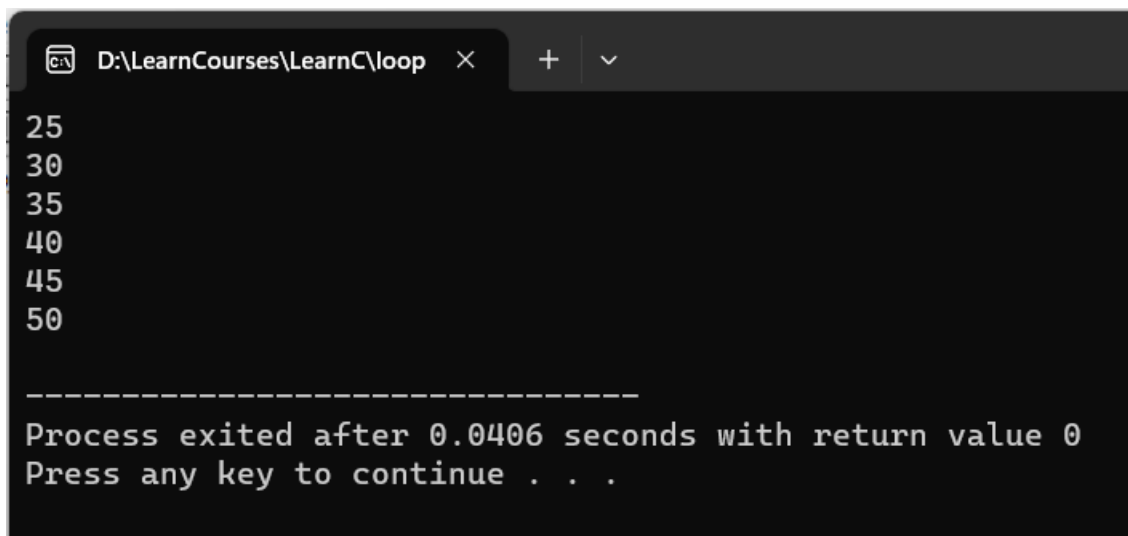
```c
#include<stdio.h>
int main() {

        int i;

        for (i=25; i<= 50; i+=5) {
                printf("%d\n", i);
        }

        return 0;
}
```

❖ **Output:**

```
D:\LearnCourses\LearnC\loop    ×    +    ∨

25
30
35
40
45
50

--------------------------------
Process exited after 0.0406 seconds with return value 0
Press any key to continue . . .
```

5. **Write C program to print to print A to Z character.**

❖ **Code:**

```
#include<stdio.h>

int main() {

        char i;

        for (i='A'; i<='Z'; i++) {
                printf("%c\n", i);
        }

        return 0;
}
```

❖ **Output:**

```
D:\LearnCourses\LearnC\loop

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z

_____
Process exited after 0.04169 seconds with return value 0
Press any key to continue . . .
```

6. Write C program to print multiplication table of any number.

❖ **Code:**
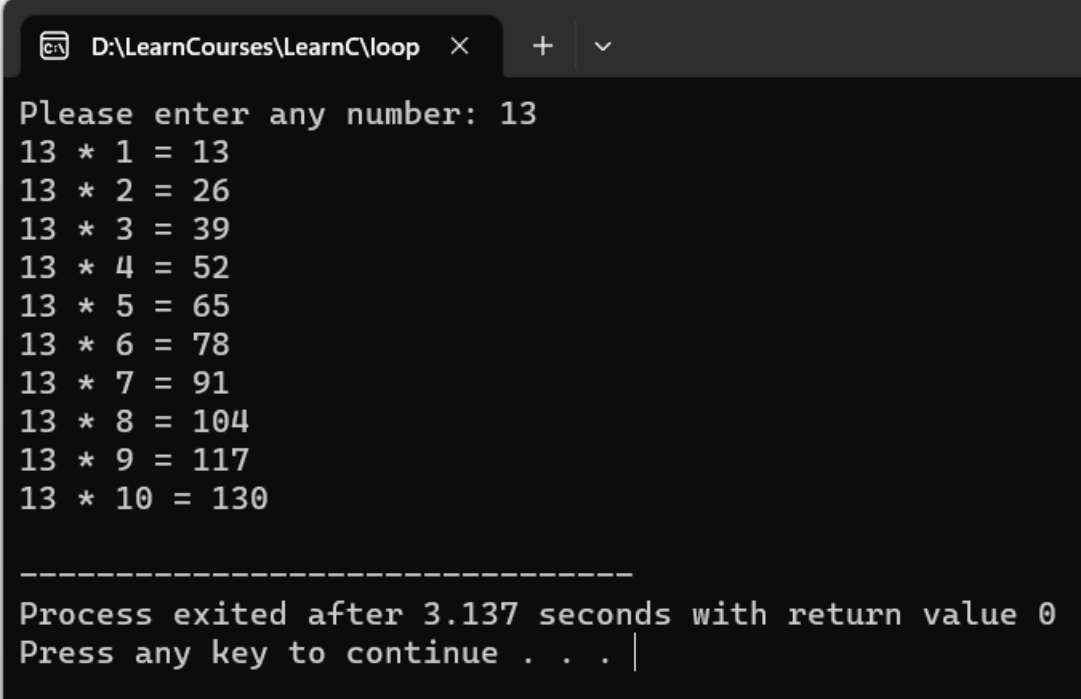
```c
#include<stdio.h>

int main() {

        int i, num;

        printf("Please enter any number: ");
        scanf("%d", &num);

        for (i=1; i<=10; i++) {
                printf("%d * %d = %d\n", num, i, num*i);
        }

        return 0;
}
```

❖ **Output:**

```
D:\LearnCourses\LearnC\loop    ×    +    ˅

Please enter any number: 13
13 * 1 = 13
13 * 2 = 26
13 * 3 = 39
13 * 4 = 52
13 * 5 = 65
13 * 6 = 78
13 * 7 = 91
13 * 8 = 104
13 * 9 = 117
13 * 10 = 130


----------------------------------
Process exited after 3.137 seconds with return value 0
Press any key to continue . . .
```

7. **Write C program to count number of boys whose weight is less than 50kg and height is greater than 170cm.**

❖ **Code:**
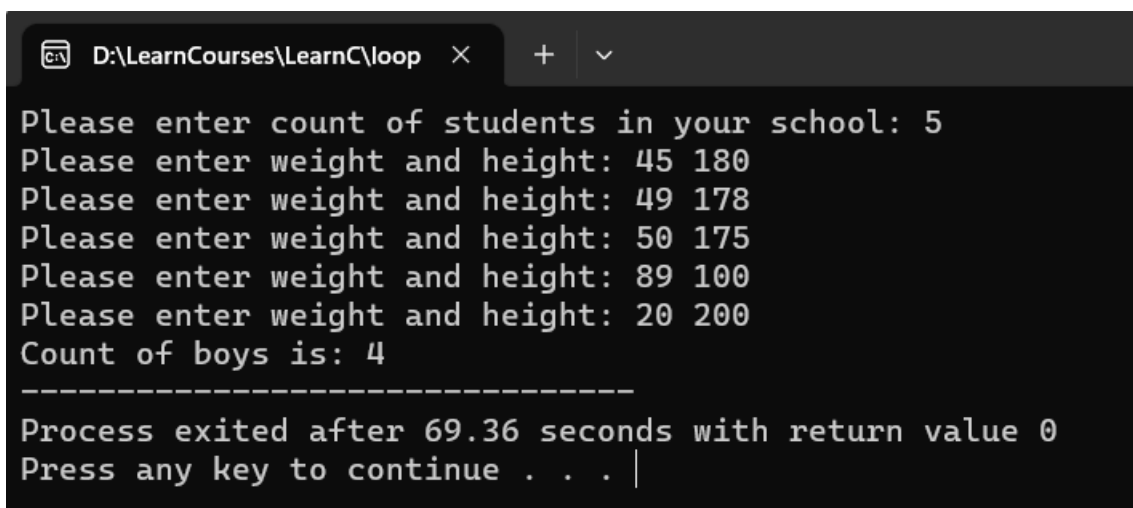
```c
#include<stdio.h>
int main() {

        int i, count=0, students;
        float height, weight;

        printf("Please enter count of students in your school: ");
        scanf("%d", &students);

        for (i=1; i<=students; i++) {
                printf("Please enter weight and height: ");
                scanf("%f %f", &weight, &height);
                if (weight <= 50 && height >= 170) {
                        count++;
                }
        }

        printf("Count of boys is: %d", count);
        return 0;
}
```

❖ **Output:**

```
D:\LearnCourses\LearnC\loop    ×    +    ∨

Please enter count of students in your school: 5
Please enter weight and height: 45 180
Please enter weight and height: 49 178
Please enter weight and height: 50 175
Please enter weight and height: 89 100
Please enter weight and height: 20 200
Count of boys is: 4
--------------------------------
Process exited after 69.36 seconds with return value 0
Press any key to continue . . .
```

8. **Write C program to find ratio of (a-b) and (c-d) of any three number. If c and d is equal than not to find ratio.**

❖ **Code:**
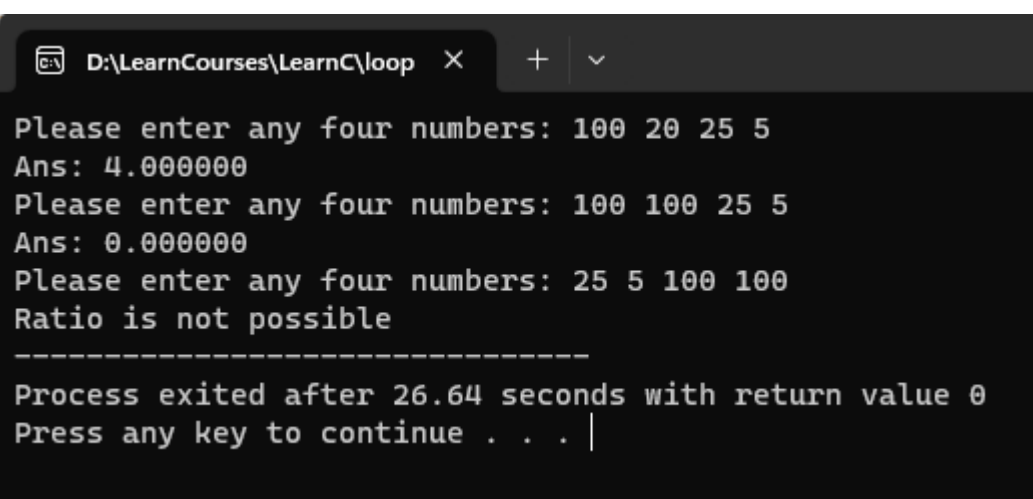
```c
#include<stdio.h>
int main() {

        int i, a, b, c, d;
        float ans;

        for (i=1; i<=3; i++) {
                printf("Please enter any four numbers: ");
                scanf("%d %d %d %d", &a, &b, &c, &d);

                if (c == d) {
                        printf("Ratio is not possible");
                } else {
                        ans = (a-b) / (c-d);
                        printf("Ans: %f\n", ans);
                }
        }

        return 0;
}
```

❖ **Output:**

9. **Write C program to calculate factorial of a number.**

❖ **Code:**

```c
#include<stdio.h>
int main() {

        int i, num, fact=1;

        printf("Please enter any number: ");
        scanf("%d", &num);

        for (i=num; i>=1; i--) {
                fact = fact*i;
        }
        printf("\nThe Factorial of %d is: %d", num, fact);

        return 0;
}
```
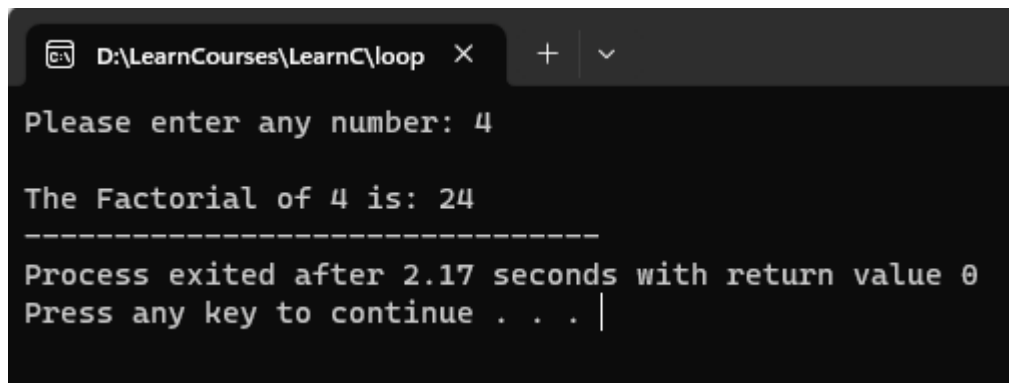
❖ **Process**:
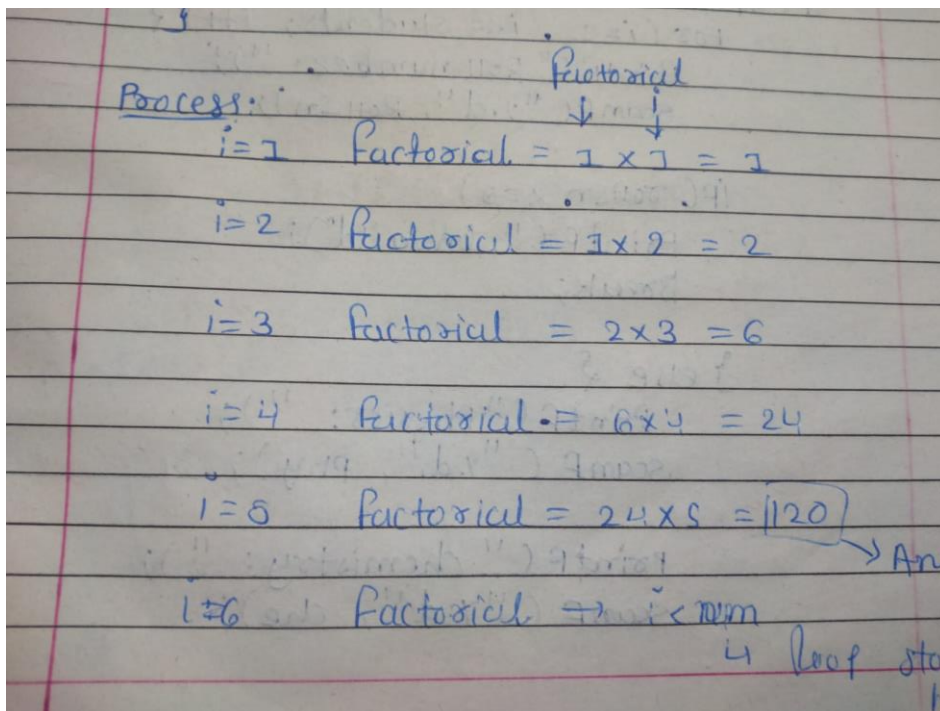
❖ **Output:**

```
D:\LearnCourses\LearnC\loop   X    +   v

Please enter any number: 4

The Factorial of 4 is: 24
--------------------------------
Process exited after 2.17 seconds with return value 0
Press any key to continue . . .
```

10. Write C program to give sum of n numbers.

❖ **Code:**

```c
#include<stdio.h>
int main() {
        int i, num, sum=0;
        printf("Please enter any number: ");
        scanf("%d", &num);

        for (i=1; i<=num; i++) {
                sum = sum + i;
        }
        printf("\nThe sum of %d is: %d", num, sum);

        return 0;
}
```

❖ **Process**:

❖ **Output:**

11. Write C program to give average of n numbers.

❖ **Code:**

```c
#include<stdio.h>
int main() {
        int i, num;
        float avg;
        printf("Please enter any number: ");
        scanf("%d", &num);
        for (i=1; i<=num; i++) {
                avg = avg + i;
        }
        avg = avg / num;
        printf("\nThe sum of %d is: %f", num, avg);

        return 0;
}
```

❖ **Process**:
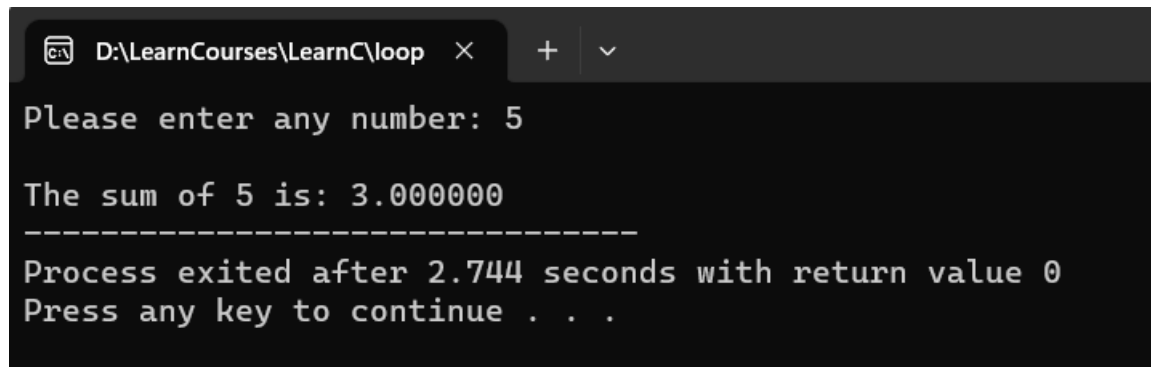
❖ **Output:**

```
D:\LearnCourses\LearnC\loop      ✕      +    ˅

Please enter any number: 5

The sum of 5 is: 3.000000
-----------------------------------
Process exited after 2.744 seconds with return value 0
Press any key to continue . . .
```
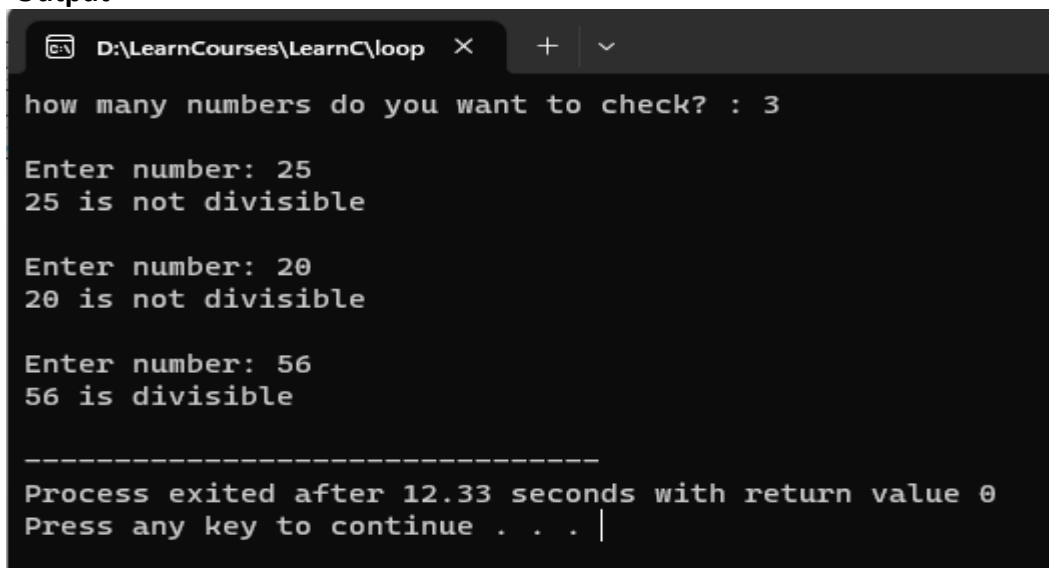
12. Write C program to find a number that is divisible by 7 or 3 from n numbers.

❖ **Code**

```c
#include<stdio.h>
int main() {
        int i, n, num;
        printf("how many numbers do you want to check? : ");
        scanf("%d", &n);
        i = 1;
        do {
                printf("\nEnter number: ");
                scanf("%d", &num);
                if (num % 7 == 0 || num % 3 == 0) {
                        printf("%d is divisible\n", num);
                } else {
                        printf("%d is not divisible\n", num);
                }
                i++;
        } while (i <= n);
        return 0;
}
```

❖ **Output**


```
how many numbers do you want to check? : 3

Enter number: 25
25 is not divisible

Enter number: 20
20 is not divisible

Enter number: 56
56 is divisible

--------------------------------
Process exited after 12.33 seconds with return value 0
Press any key to continue . . .
```

13. Write C program to count number of digits in a number.

❖ **Code**

```c
#include<stdio.h>
int main() {
        int n, counter=0;
        printf("Please enter any number for count digit: ");
        scanf("%d", &n);
        while (n > 0) {
                n = n/10;
                counter++;
        }
        printf("The digit of your number is: %d", counter);
        return 0;
}
```
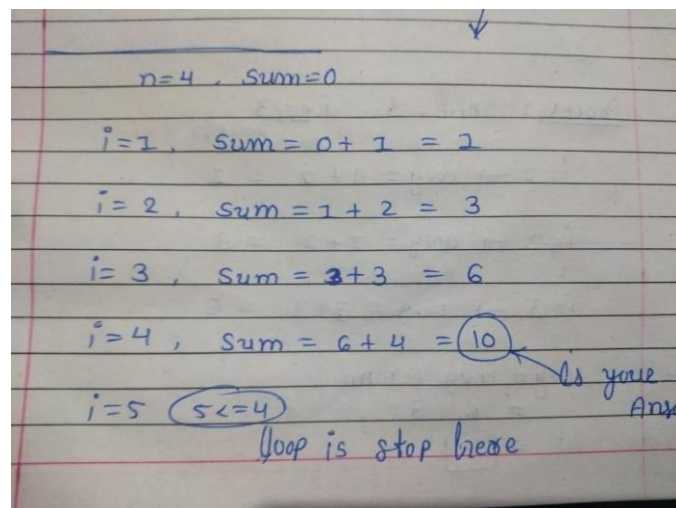
❖ Process

❖ **Output**

14. Write C program to enter a number and print its reverse & check weather num is palindrome or not?

❖ **Code**

```c
#include<stdio.h>
int main() {

        int n, rem, rev=0, org_num;

        printf("Please enter any number for for make revers digit and find that number is palindrome or not.: ");
        scanf("%d", &org_num);

        n = org_num;
        while (n > 0) {
                rem = n % 10;
                rev = rev * 10 + rem;
                n = n/10;
        }

        printf("Revers number: %d\n\n", rev);

        if (org_num == rev) {
                printf("YES - Your added number is palindrome number.");
        } else {
                printf("NO - Your added number isn't palindrome number.");
        }
        return 0;

}
```

❖ Process

* Process: n = 342.

• n≥0 ✓, n = 342

$rem = n \% 10 = 342 \% 10 = 2$
$rev = rev \times 10 + rem = 0 \times 10 + 2 = 2$
$n = n/10 = 342/10 = 34$

• n>0 ✓ n = 34

$rem = n \% 10 = 34 \% 10 = 4$
$rev = rev \times 10 + rem = 2 \times 10 + 4 = 24$
$n = n/10 = 34/10 = 3$

• n>0 ✓ n = 3

$rem = n \% 10 = 3 \% 10 = 3$
$rev = rev \times 10 + rem = 24 \times 10 + 3 = \boxed{243}$
$n = n/10 = 3/10 = 0$

• n > 0 ✗ n = 0

loop is stop here   Is your Answer.

❖ **Output**

D:\LearnCourses\LearnC\loop

Please enter any number for for make revers digit and find that number is palindrome or not.: 112211
Revers number: 112211

YES - Your added number is palindrome number.

Process exited after 8.415 seconds with return value 0
Press any key to continue . . .

15. Write C program to check number is prime or not.

❖ **Code**

```c
#include<stdio.h>
int main () {
        int num, i, flag = 0;
        printf("Please enter any number: ");
        scanf("%d", &num);

        if (num > 1) {
                if (num == 2) {
                        printf("%d is prime number.", num);
                } else {
                        for (i = 2; i < num; i++) {
                                if (num % i == 0) {
                                        flag = 1;
                                        break;
                                }
                        }
                        if (flag == 0) {
                                printf("%d is prime number", num);
                        } else {
                                printf("%d is not prime number", num);
                        }
                }
        } else {
                printf("%d is should more than 1.");
        }

        return 0;
}
```

❖ Process

* Process: num = 4

1. i < num → 2 < num 4 ✓

    num % 2 == 0
    4 % 2 == 0 ← Because not prime number.

* num = $3

2. i < num → 2 < 3 ✓

    num % 2 == 0
    3 % 2 == 1 → Because is prime number

❖ Output


```
D:\LearnCourses\LearnC\loop    ×    +   ∨

Please enter any number: 7
7 is prime number
---------------------------------
Process exited after 7.071 seconds with return value 0
Press any key to continue . . .
```

16. Write C program to find class of the n students from their m marks.

Note: 1. You have to take student's roll number and 5 subject marks out of 100.

2. If total marks greater than 450 then grade will be A.

   If total marks greater than 350 then grade will be B.

   If total marks less than 350 then grade will be C.

❖ **Code**

```c
#include<stdio.h>

int main () {

        int i, students, roll_n, phy, chem, bio, eng, sans, sub_mark, totle_mark;

        char grade;

        printf("How many students who are you want to find the class by their marks?: ");

        scanf("%d", &students);

        if (students > 0) {

                for (i = 1; i <= students; i++) {

                        printf("\nPlease enter roll number of student: ");

                        scanf("%d", &roll_n);

                        if (roll_n <= 0) {

                                printf("\nINVALID - Please check your added input.\n");

                                break;

                        } else {

                                printf("\nPlease enter marks out of 100 of given subject to
below:\n");

                                printf("Physics: ");

                                scanf("%d", &phy);

                                printf("Chemistry: ");

                                scanf("%d", &chem);

                                printf("Biology: ");
```

```c
                            scanf("%d", &bio);

                            printf("English: ");
                            scanf("%d", &eng);

                            printf("Sanskrit: ");
                            scanf("%d", &sans);

                            totle_mark = phy + chem + bio + eng + sans;

                            if (totle_mark > 450) {
                                    grade = 'A';
                            } else if (totle_mark > 350 && totle_mark <= 450) {
                                    grade = 'B';
                            } else if (totle_mark <= 350) {
                                    grade = 'C';
                            } else if (totle_mark > 500) {
                                    printf("INVALID - Please check your added input.");
                            }

                            printf("\nTotle marks: %d/500", totle_mark);
                            printf("\nGrade: %c", grade);
                    }
            }
    } else {
            printf("\nINVALID - Please check your added input.");
    }


    return 0;
}
```

❖ **Output**


```
How many students who are you want to find the class by their marks?: 2

Please enter roll number of student: 12

Please enter marks out of 100 of given subject to below:
Physics: 92
Chemistry: 95
Biology: 86
English: 90
Sanskrit: 92

Totle marks: 455/500
Grade: A

Please enter roll number of student: 32

Please enter marks out of 100 of given subject to below:
Physics: 89
Chemistry: 86
Biology: 52
English: 52
Sanskrit: 40

Totle marks: 319/500
Grade: C

-----------------------------------
Process exited after 30.73 seconds with return value 0
Press any key to continue . . .
```

17. **Write C program to find expenses of an organization from n month.**
    Note:
    1. **You have to ask expense of electricity, salary and marketing of each month.**
    2. **You have to print Month number and total expense of each month.**

❖ **Code**

```c
#include<stdio.h>

int main () {
        int i, month_from, month_to, salary, elec, mkt, total_exp;


        printf("From which month you want to calculate the expenses: ");
        scanf("%d", &month_from);
        printf("To which month you want to calculate the expenses: ");
        scanf("%d", &month_to);


        if (month_from <= month_to) {
                for (i = month_from; i <= month_to; i++) {
                        printf("\n-------\nMONTH:%d\n-------\n",i);


                        printf("Salary: Rs.");
                        scanf("%d", &salary);


                        printf("Electricity expense : Rs.");
                        scanf("%d", &elec);


                        printf("Marketing expense: Rs.");
                        scanf("%d", &mkt);


                        total_exp = salary + elec + mkt;
                        printf("\nYour monthly expense: Rs.%d/-\n", total_exp);
                }
                printf("\nYou can see here all your total monthly expenses month
wise.\n");
```

```c
                    for (i = month_from; i <= month_to; i++) {

                            printf("%d - Rs.%d/-\n", i, total_exp);

                    }

            } else {

                    printf("Sorry - We can not calculate expense.");

            }

            return 0;

    }
```

❖ **Output**

18. Write a **program** to calculate x power y.(when user input x is 2 and y is 3 then the result will be 8)

❖ **Code**

```
#include<stdio.h>
int main () {

        int count=1, x, y, power=1;
        printf("Please enter any two numbers for calculate X power by Y: ");
        scanf("%d %d", &x, &y);


        while (count <= y) {
                power = power * x;
                count++;
        }
        printf("Your ans is: %d", power);
        return 0;

}
```

❖ Process


```
*  Process:

        x = 2              y = 3
                    x^y
            Ans: 8


•  Count <= y
     ①  <= 3 ✓
   default                    Default
       Power = Power x x  = ① x 2  = 2

•  Count <= y
     2 <= 3 ✓

        Power = Power x x  = 2 x 2 = 4

•  count <= y
     3 <= 3 ✓

        Power =  4 x 2  = 8        8 your Answer:

•  Count <= y
     4 <= 3 x

        loop is stop here
```

❖ Output


```
D:\LearnCourses\LearnC\loop   ×   +  ∨

Please enter any two numbers for calculate X power by Y: 5 3
Your ans is: 125
-----------------------------------
Process exited after 4.484 seconds with return value 0
Press any key to continue . . .
```

19. Write C program to give average of n numbers.

❖ **Code**

```c
#include<stdio.h>
int main() {

    int n, sum = 0, rem;

    printf ("Please enter any number: ");
    scanf ("%d", &n);

    while (n > 0) {
        rem = n%10;
        sum = sum+rem;
        n = n/10;
    }

    printf ("The sum of your given number is %d" , sum);
    return 0;
}
```

❖ Process

❖ Output


```
D:\LearnCourses\LearnC\loop    X    +    v

Please enter any number: 394621872
The sum of your given number is 42
--------------------------------
Process exited after 24.23 seconds with return value 0
Press any key to continue . . .
```

20. Write a program to print all Armstrong numbers under 1000.

❖ **Code**

```c
#include<stdio.h>

int main (){

        int i, rem=0, res=0, temp;


        for (i = 1; i <= 1000; i++) {
                temp = i;
                while (temp > 0) {
                        rem = temp % 10;
                        res = res + (rem * rem * rem);
                        temp = temp / 10;
                }

                if (res == i) {
                        printf("%d\n", i);
                }
                res = 0;
        }

        return 0;
}
```
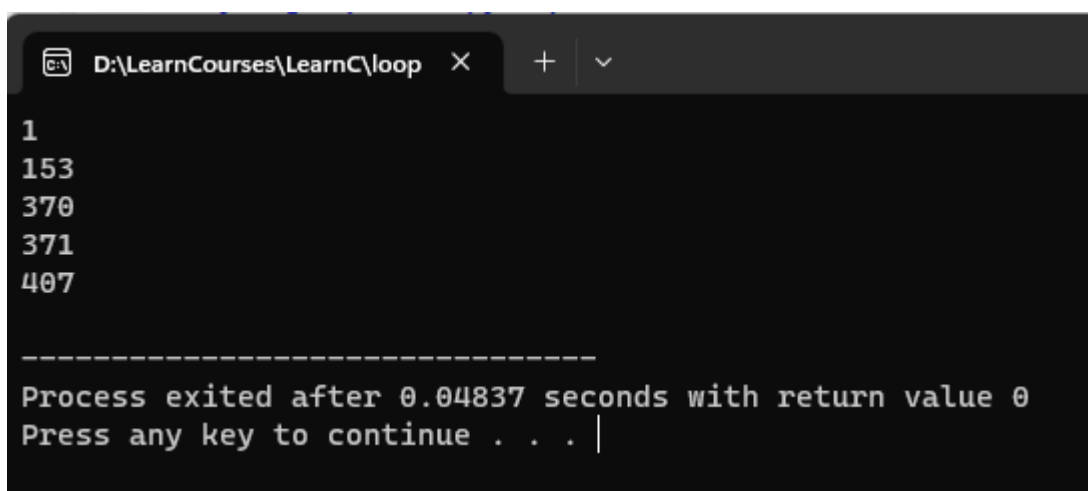
❖ **Output**